SECTION WW

WIPER, WASHER & HORN

CONTENTS

PRECAUTIONS **2**
Precautions for Supplemental Restraint System (SRS) “AIR BAG” and “SEAT BELT PRE-TENSIONER” 2
FRONT WIPER AND WASHER SYSTEM **3**
System Description 3
WIPER OPERATION 3
WASHER OPERATION 4
Wiring Diagram — WIPER — 5
Terminal and Reference Values for Combination Switch 6
Removal and Installation of Front Wiper Arms, Adjustment of Wiper Arms Stop Location 6
Removal and Installation of Wiper Motor and Linkage 7
REMOVAL 7
INSTALLATION 7
Front Washer Nozzle Adjustment 8
Front Washer Tube Layout 9
Removal and Installation of Front Washer Nozzle.... 9
REMOVAL 9
INSTALLATION 9
Inspection of Front Washer Nozzle 9
CHECK VALVE 9
Removal and Installation of Wiper and Washer Switch 10
REMOVAL 10
INSTALLATION 10
Removal and Installation of Washer Tank 10
REMOVAL 10
INSTALLATION 10
Removal and Installation of Washer Motor 10
REMOVAL 10
INSTALLATION 11
REAR WIPER AND WASHER SYSTEM **12**
Wiring Diagram — WIP/R — 12
Terminal and Reference Values for Combination Switch 14
Removal and Installation of Rear Wiper Arms, Adjustment for Wiper Arms Stop Location 14
Removal and Installation of Wiper Motor and Linkage 15
REMOVAL 15
INSTALLATION 15
Washer Nozzle Adjustment 16
Removal and Installation of Rear Washer Nozzle... 16
REMOVAL 16
INSTALLATION 16
Inspection of Rear Washer Nozzle 16
CHECK VALVE 16
Removal and Installation of Wiper and Washer Switch 17
Removal and Installation of Washer Tank 17
Removal and Installation of Washer Motor 17
Rear Washer Tube Layout 17
HORN **18**
Wiring Diagram — HORN — 18
Removal and Installation 19
REMOVAL 19
INSTALLATION 19
POWER SOCKET **20**
Wiring Diagram –POWER SOCKET– 20
Removal and Installation of Front Power Socket ... 21
REMOVAL 21
INSTALLATION 21
Removal and Installation of Rear Power Socket ... 21
REMOVAL 21
INSTALLATION 21

PRECAUTIONS

PFP:00011

Precautions for Supplemental Restraint System (SRS) “AIR BAG” and “SEAT BELT PRE-TENSIONER”

AKS00BBD

The Supplemental Restraint System such as “AIR BAG” and “SEAT BELT PRE-TENSIONER”, used along with a front seat belt, helps to reduce the risk or severity of injury to the driver and front passenger for certain types of collision. Information necessary to service the system safely is included in the SRS and SB section of this Service Manual.

WARNING:

- **To avoid rendering the SRS inoperative, which could increase the risk of personal injury or death in the event of a collision which would result in air bag inflation, all maintenance must be performed by an authorized NISSAN/INFINITI dealer.**
- **Improper maintenance, including incorrect removal and installation of the SRS, can lead to personal injury caused by unintentional activation of the system. For removal of Spiral Cable and Air Bag Module, see the SRS section.**
- **Do not use electrical test equipment on any circuit related to the SRS unless instructed to in this Service Manual. SRS wiring harnesses can be identified by yellow and/or orange harnesses or harness connectors.**

FRONT WIPER AND WASHER SYSTEM

PFP:28810

System Description

AKS00BBF

WIPER OPERATION

The wiper switch is controlled by a lever built in combination switch.
There are three wiper switch positions

- LO speed
- HI speed
- INT (Intermittent)

With the ignition switch in ON or START position, power is supplied

- through 20A fuse [No. 6, located in fuse block (J/B)]
- to front wiper motor terminal 2
- to combination switch (front wiper and washer switch) terminal 15.

Low and High Speed Wiper Operation

Ground is supplied

- to combination switch (front wiper and washer switch) terminal 17
- through grounds E24 and E50.

When the wiper switch is placed in the LO position, ground is supplied

- through combination switch (front wiper and washer switch) terminal 14
- to front wiper motor terminal 3.

With power and ground supplied, the wiper motor operates at low speed.
When the wiper switch is placed in the HI position, ground is supplied

- through combination switch (front wiper and washer switch) terminal 16
- to front wiper motor terminal 5.

With power and ground supplied, the wiper motor operates at high speed.

Auto Stop Operation

With wiper switch turned OFF, wiper motor will continue to operate until wiper arms reach windshield base.
When wiper arms are not located at base of windshield with wiper switch OFF, ground is provided

- from combination switch (front wiper and washer switch) terminal 14
- to front wiper motor terminal 3, in order to continue wiper motor operation at low speed.

Ground is also supplied

- through combination switch (front wiper and washer switch) terminal 13
- to front wiper motor terminal 4
- through front wiper motor terminal 1
- through grounds E24 and E50.

When wiper arms reach base of windshield, front wiper motor terminals 2 and 4 are connected instead of terminals 1 and 4. Wiper motor will then stop wiper arms at the STOP position.

Intermittent Operation

The front wiper motor operates the wiper arms one time at low speed at a set interval of approximately 1 to 13 seconds. This feature is controlled by the wiper amplifier (INT SW) combined with front wiper and washer switch.
When the wiper switch is placed in the INT position, ground is supplied to wiper amplifier.
The desired interval time is input to wiper amplifier (INT VR) from variable intermittent wiper volume combined with front wiper and washer switch.
Then intermittent ground is supplied

- through wiper amplifier (OUTPUT) and
- through combination switch (front wiper and washer switch) terminal 14
- to front wiper motor terminal 3.

The wiper motor operates at low speed at the desired interval.

WASHER OPERATION

With the ignition switch in the ON or START position, power is supplied

- through 20A fuse [No. 6, located in fuse block (J/B)]
- to front washer motor terminal 1.

When the lever is pulled to the WASH position, ground is supplied

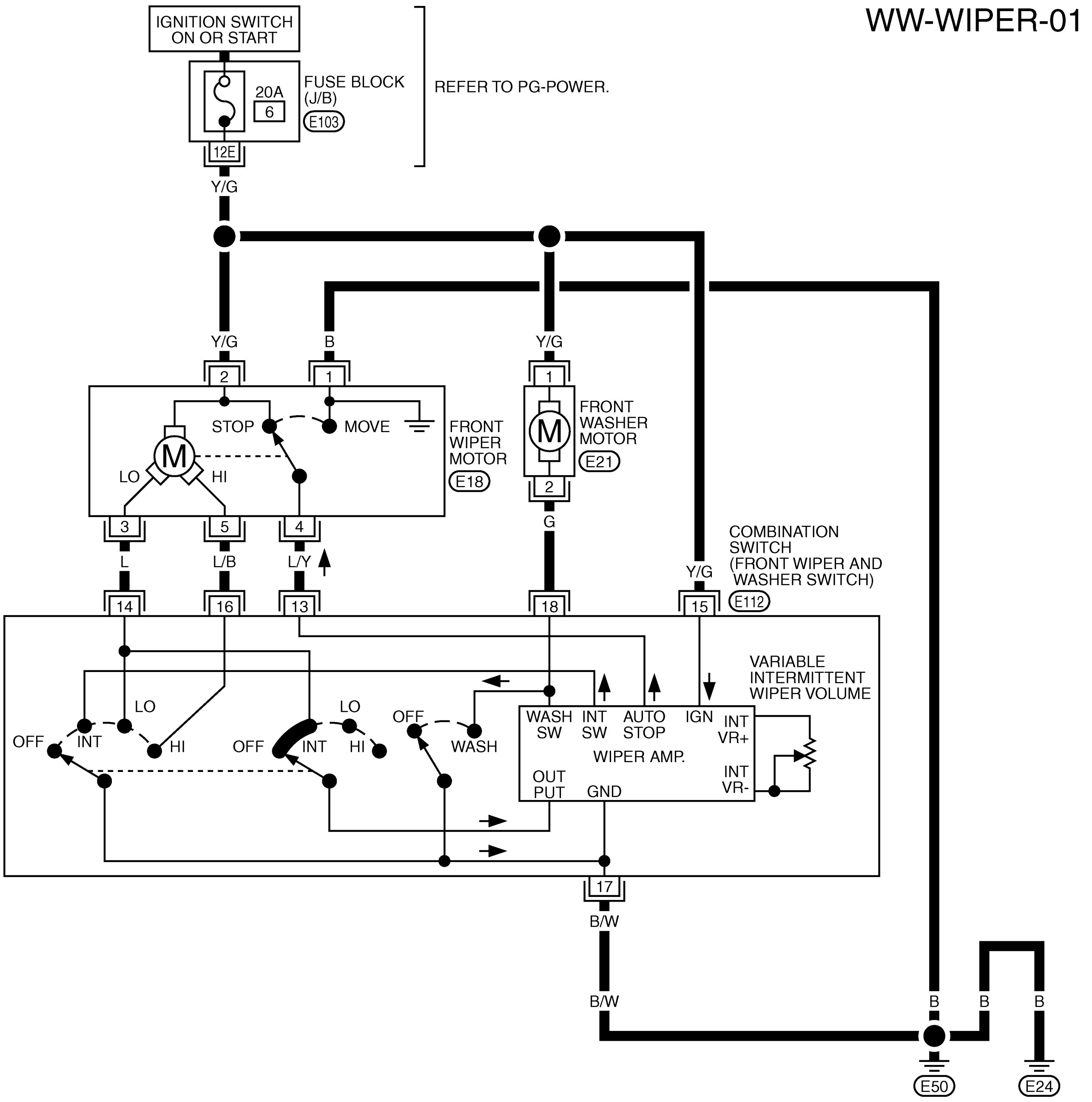
- from grounds E24 and E50
- through combination switch (front wiper and washer switch) terminal 17, and
- through combination switch (front wiper and washer switch) terminal 18
- to front washer motor terminal 2.

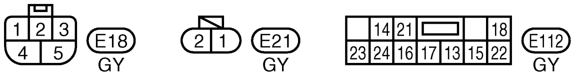
With power and ground supplied, the washer motor operates.

When the lever is pulled to the WASH position for one second or more, the wiper motor operates at low speed for approximately 3 seconds to clean windshield. This feature is controlled by the wiper amplifier in the same manner as the intermittent operation.

Wiring Diagram — WIPER —

AKS00BBG


WW-WIPER-01
IGNITION SWITCH ON OR START
20A
6
FUSE BLOCK (J/B)
E103
12E
REFER TO PG-POWER.
Y/G
Y/G
B
Y/G
2
1
1
STOP
MOVE
M
LO
HI
FRONT WIPER MOTOR
E18
FRONT WASHER MOTOR
E21
2
G
3
5
4
L
L/B
L/Y
Y/G
COMBINATION SWITCH (FRONT WIPER AND WASHER SWITCH)
E112
14
16
13
18
15
VARIABLE INTERMITTENT WIPER VOLUME
OFF
INT
LO
HI
OFF
INT
LO
HI
OFF
WASH
WASH SW
INT SW
AUTO STOP
IGN
INT VR+
WIPER AMP.
OUT PUT
GND
INT VR-
17
B/W
B/W
B
B
B
E50
E24


1 2 3
4 5
E18
GY
2 1
E21
GY
14 21 18
23 24 16 17 13 15 22
E112
GY

REFER TO THE FOLLOWING.
E103 -FUSE BLOCK-JUNCTION BOX (J/B)

TKWB0190E

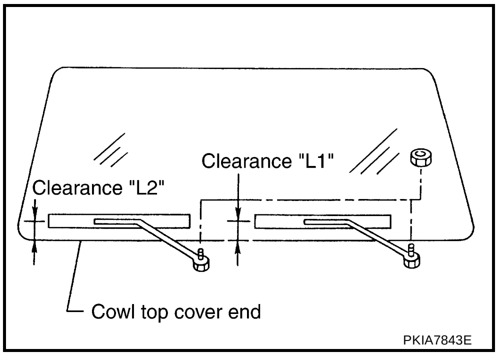
Terminal and Reference Values for Combination Switch

AKS00BBH

Terminal No.	Wire color	Item	Condition			Voltage
			Ignition switch	Condition or operation		
13	L/Y	Front wiper auto stop signal	ON	Wiper operating		Approx. 0V
				Wiper stopped		Battery voltage
14	L	Front wiper motor operation signal (LO)	ON	Wiper switch	OFF	Battery voltage
					LO	Approx. 0V
15	Y/G	Ignition ON signal	ON	—		Battery voltage
16	L/B	Front wiper motor operation signal (HI)	ON	Wiper switch	OFF	Battery voltage
					HI	Approx. 0V
17	B/W	Ground	OFF	—		Approx. 0V
18	G	Front washer switch signal	ON	Washer switch	ON	Approx. 0V
					OFF	Battery voltage

Removal and Installation of Front Wiper Arms, Adjustment of Wiper Arms Stop Location

AKS00BBI

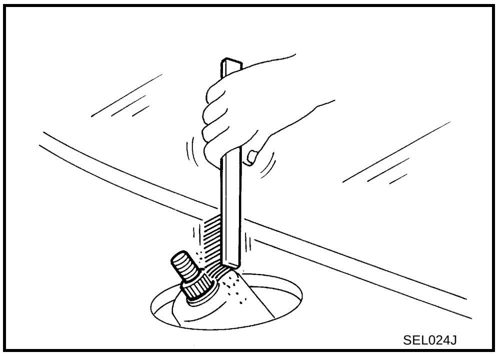


1. Prior to wiper arm installation, turn on wiper switch to operate wiper motor and then turn it “OFF” (Auto Stop).
2. Lift the blade up and then set it down onto glass surface to set the blade center to clearance “L1” & “L2” immediately before tightening nut.
3. Eject washer fluid. Turn on wiper switch to operate wiper motor and then turn it “OFF”.
4. Ensure that wiper blades stop within clearance “L1” & “L2”.
    - **Clearance “L1” : 49.2 - 64.2 mm (1.937 - 2.528 in)**
    - **Clearance “L2” : 39.3 - 54.3 mm (1.547 - 2.138 in)**

- **Tighten wiper arm nuts to specified torque.**

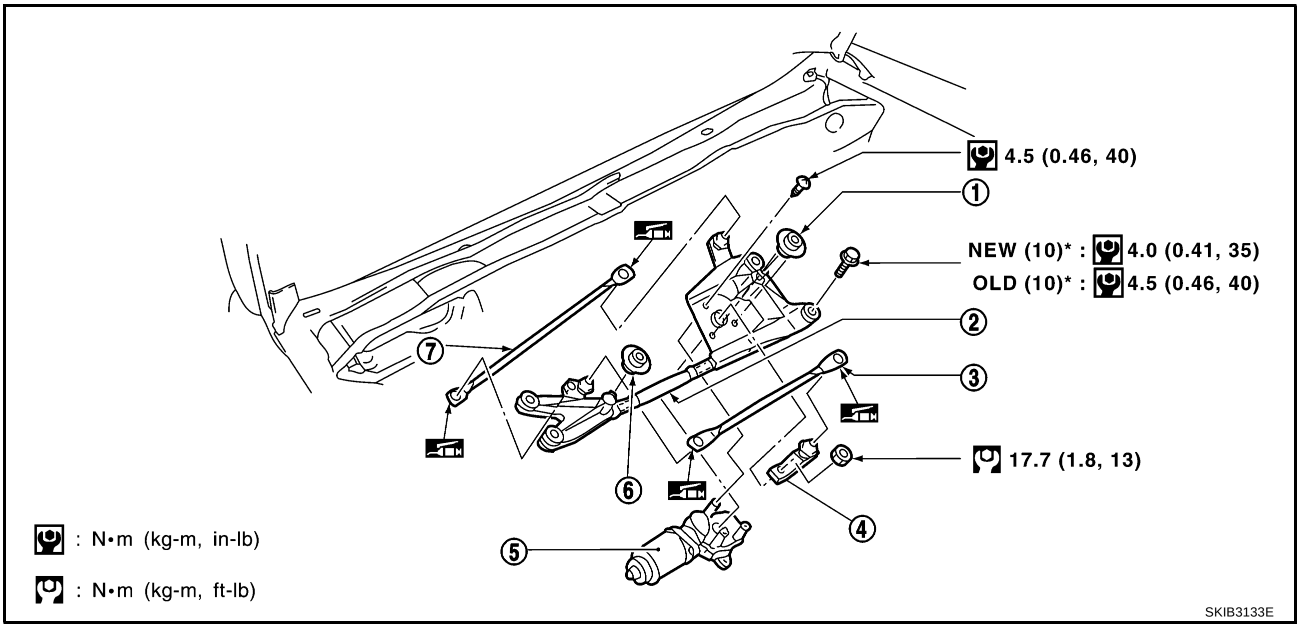
Front wiper arm nut : 23.6 N·m (2.4 kg-m, 17 ft-lb)

- Before reinstalling wiper arm, clean up the pivot area as illustrated. This will reduce possibility of wiper arm looseness.



Removal and Installation of Wiper Motor and Linkage

AKS00BBJ

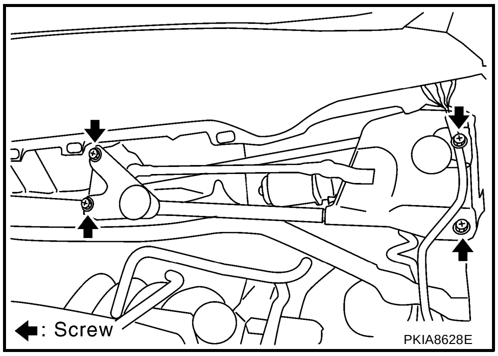


*: In regard to the notation of torque in the illustration, “NEW” shows an ISO standard, “OLD” shows a conventional standard, and the measurements of hexagonal width across flats are in parentheses. For the identification in case of the same width across flats, refer to GI-45, "Tightening Torque Table (New Standard Included)" .

1. Rubber
2. Wiper frame
3. Wiper link
4. Motor arm
5. Wiper motor
6. Rubber
7. Wiper link

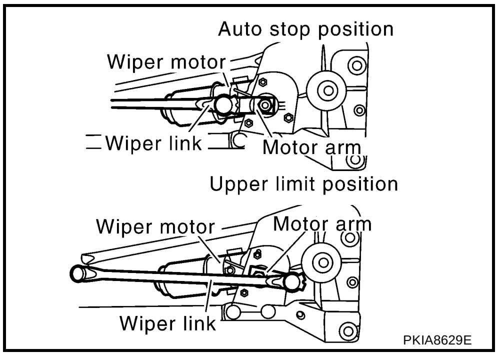
REMOVAL

1. Operate wiper motor, and stop it at the upper limit position.
2. Remove wiper arm from the vehicle.
3. Remove cowl top cover. Refer to EI-19, "COWL TOP" .
4. Remove screws (4) and remove wiper motor assembly from the vehicle.
5. Disconnect wiper motor connector.
6. Remove wiper link from wiper frame.
7. Remove wiper motor from wiper frame.



INSTALLATION

1. Connect wiper motor to connector. Turn wiper switch ON to operate wiper motor, then turn wiper switch OFF (auto stop).
2. Disconnect wiper motor connector.
3. Install wiper motor to wiper frame.
4. Install wiper motor assembly to the vehicle.


Auto stop position
Wiper motor
Wiper link
Motor arm
Upper limit position
Wiper motor
Motor arm
Wiper link
PKIA8629E

5. Install wiper link to wiper motor arm.
6. Connect wiper motor connector. Turn wiper switch ON to operate wiper motor, then turn wiper switch OFF (auto stop).
7. Rotate motor arm to the upper limit position.
8. Install wiper motor assembly to the vehicle.
9. Turn wiper switch ON to operate wiper motor, then turn wiper switch OFF (auto stop).
10. Install cowl top cover. Refer to EI-19, "COWL TOP" .
11. Install wiper arm to the vehicle. Refer to WW-6, "Removal and Installation of Front Wiper Arms, Adjustment of Wiper Arms Stop Location" .
    - **Tighten wiper arm nuts to specified torque.**

Front wiper arm nut : 23.6 N·m (2.4 kg-m, 17 ft-lb)

CAUTION:

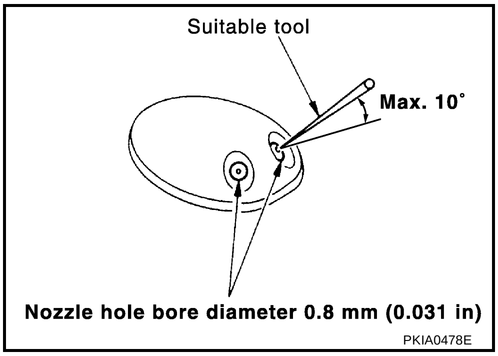
- **Do not drop wiper motor or cause it to contact other parts.**
- **Check grease conditions of motor arm and wiper link joint (at retainer). Apply grease if necessary.**

Front Washer Nozzle Adjustment

AKS00BBK

Adjust washer nozzle with suitable tool as shown in the figure.

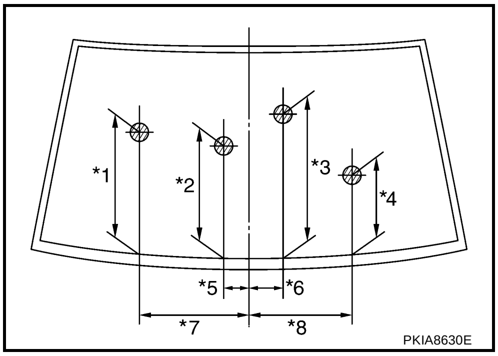
Adjustable range : ±10° (In any direction)


Suitable tool
Max. 10°
Nozzle hole bore diameter 0.8 mm (0.031 in)
PKIA0478E

Unit: mm (in)

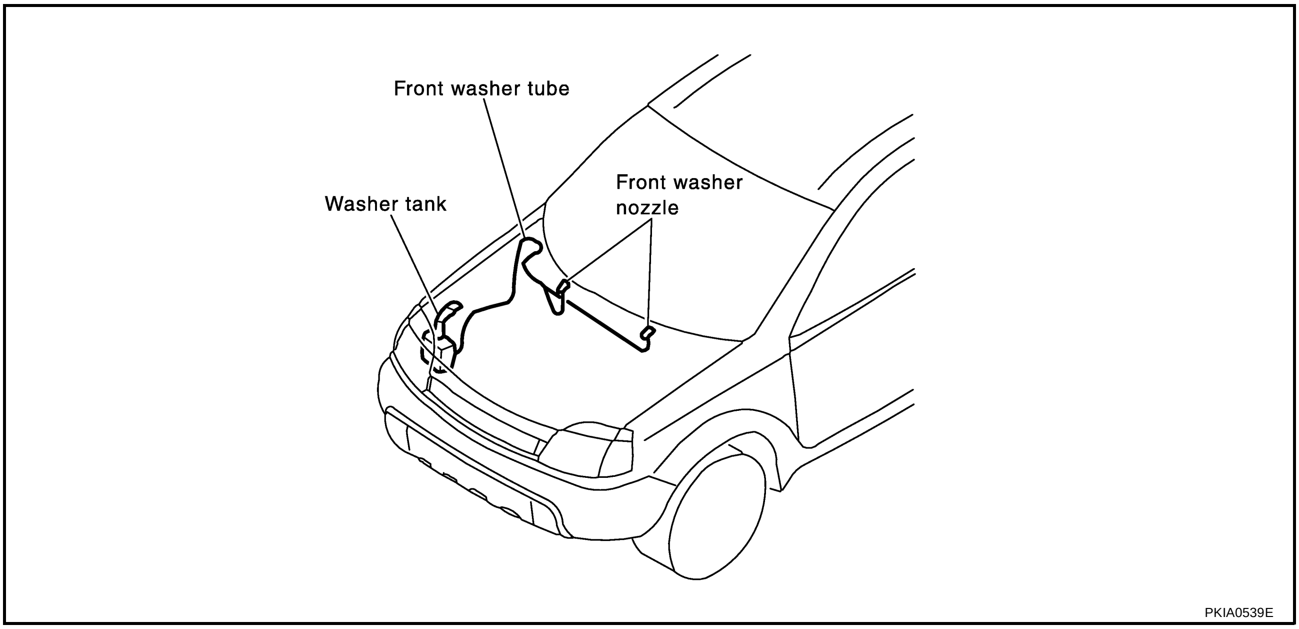
*1	342 (13.46)	*5	138 (5.43)
*2	325 (12.80)	*6	155 (6.10)
*3	433 (17.05)	*7	386 (15.20)
*4	238 (9.37)	*8	378 (14.88)

*: The diameters of these circles are less than 80 mm (3.15 in).


*1
*2
*3
*4
*5
*6
*7
*8
PKIA8630E

Front Washer Tube Layout

AKS00BBL

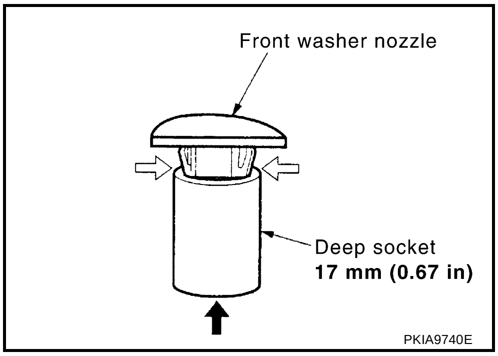

Front washer tube
Washer tank
Front washer nozzle
PKIA0539E

Removal and Installation of Front Washer Nozzle

AKS00BBM

REMOVAL

Push front washer nozzle pawl toward engine hood to pull out.


Front washer nozzle
Deep socket
17 mm (0.67 in)
PKIA9740E

INSTALLATION

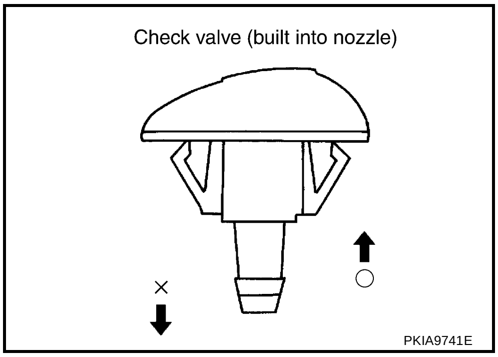
1. After connecting washer hose, press nozzle from cowl top cover surface.
2. Assemble nozzle and socket.
3. Adjust nozzle injection position.

Inspection of Front Washer Nozzle

AKS00BBN

CHECK VALVE

Blow air in the injection direction, and check that air flows only one way. Make sure that the reverse direction (inhale) is not possible.

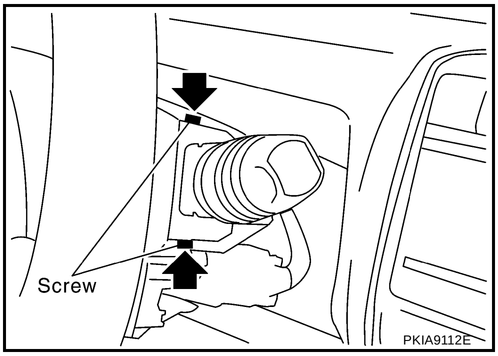

Check valve (built into nozzle)
×
○
PKIA9741E

Removal and Installation of Wiper and Washer Switch

AKS00BBO

REMOVAL

1. Remove steering column cover. Refer to IP-10, "INSTRUMENT PANEL ASSEMBLY" .
2. Disconnect combination switch (front wiper and washer switch) connector.
3. Remove screws (2) then remove wiper washer switch from the base.



INSTALLATION

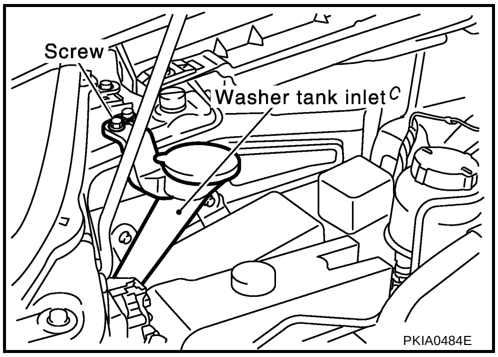
Installation is the reverse of removal.

Removal and Installation of Washer Tank

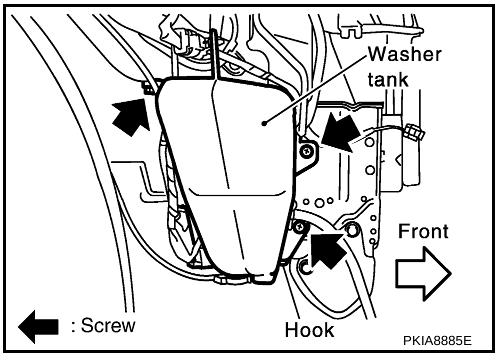
AKS00BBP

REMOVAL

1. Remove washer tank inlet installation screw and pull out washer tank inlet.
2. Remove fender protector. Refer to EI-20, "FENDER PROTECTOR" .
3. Disconnect washer pump connector and washer level sensor connector.



4. Remove washer tank mounting screws (3) and pawl.
5. Remove washer hose, and remove washer tank from the vehicle.



INSTALLATION

Installation is the reverse of removal. Note the following.

CAUTION:

After installation, add water up to the upper level of the washer tank inlet, and check for water leaks.

Washer tank mounting screw : 4.5N·m (0.46 kg-m, 40 in-lb)

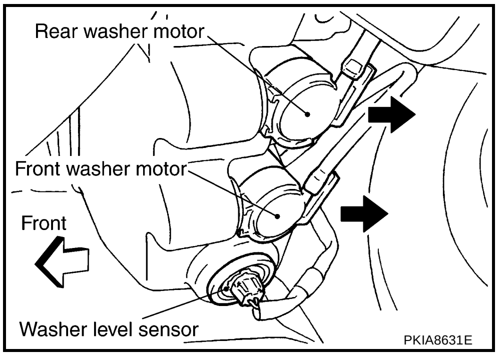
Removal and Installation of Washer Motor

AKS00BBQ

REMOVAL

1. Remove fender protector. Refer to EI-20, "FENDER PROTECTOR" .
2. Disconnect washer motor connector and hose.

3. Pull out washer motor in the direction of the arrow in the figure, and remove washer motor from washer tank.


Rear washer motor
Front washer motor
Front
Washer level sensor
PKIA8631E

INSTALLATION

Installation is the reverse of removal. Note the following.

CAUTION:

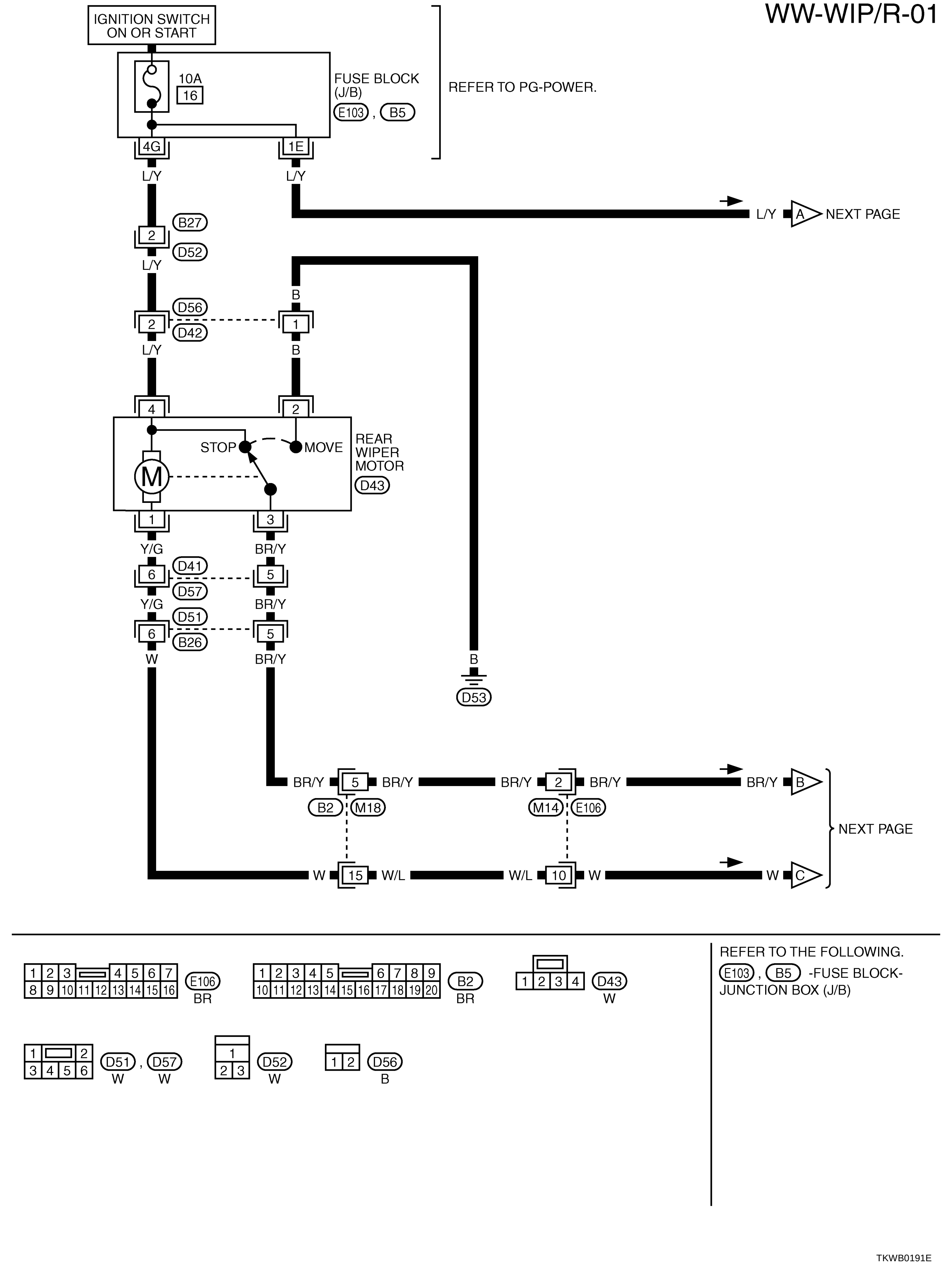
When installing washer motor, there should be no packing twists, etc.

REAR WIPER AND WASHER SYSTEM

PFP:28710

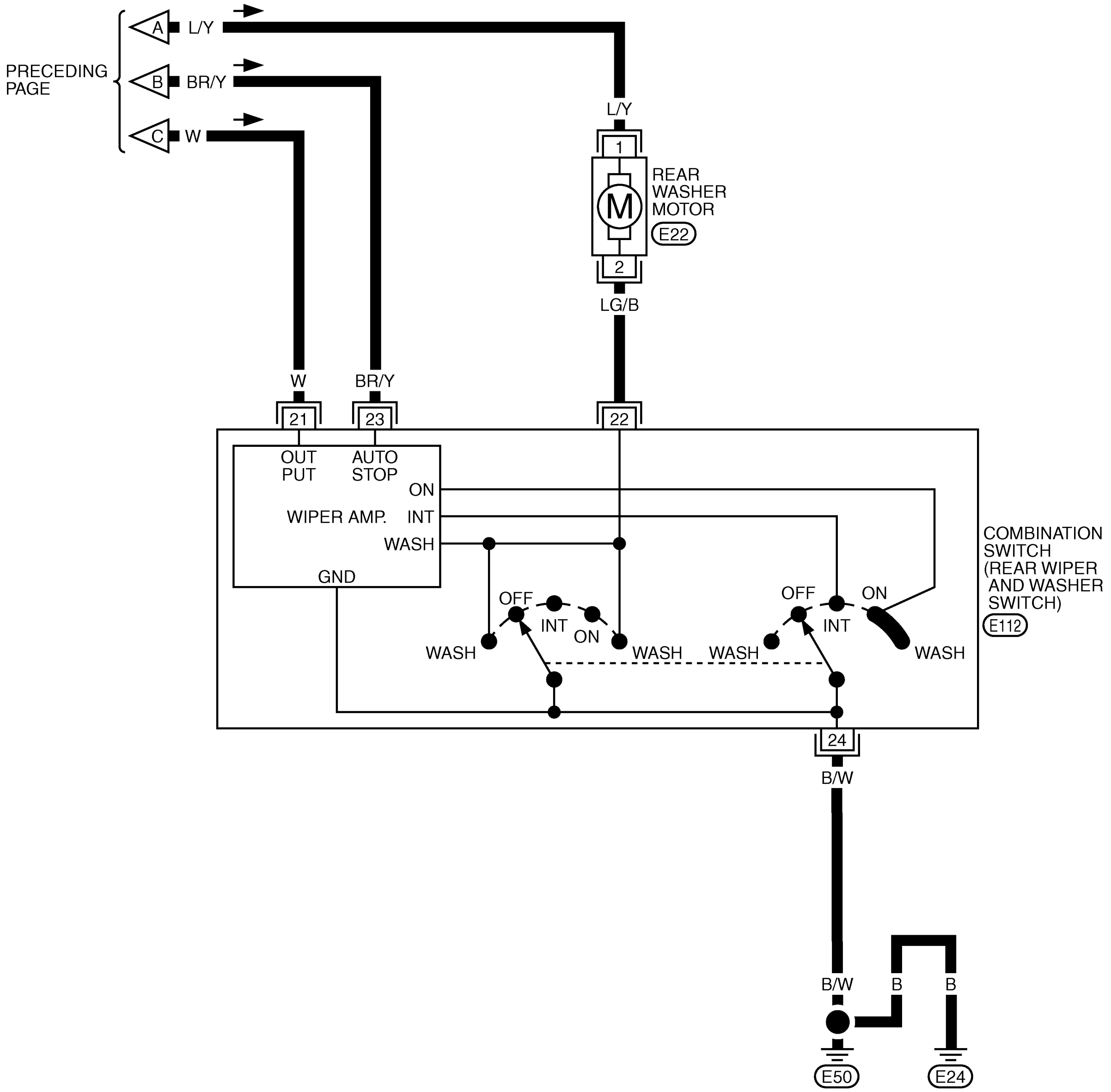
Wiring Diagram — WIP/R —

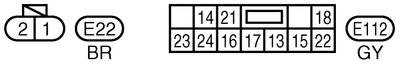
AKS00BBR



WW-WIP/R-01
IGNITION SWITCH ON OR START
10A
16
FUSE BLOCK (J/B)
E103 , B5
REFER TO PG-POWER.
4G
1E
L/Y
L/Y
L/Y
A
NEXT PAGE
B27
2
D52
L/Y
B
D56
2
D42
1
L/Y
B
4
2
STOP
MOVE
M
REAR WIPER MOTOR
D43
1
3
Y/G
BR/Y
D41
6
5
D57
Y/G
BR/Y
D51
6
5
B26
W
BR/Y
B
D53
BR/Y
5
BR/Y
B2
M18
BR/Y
2
BR/Y
M14
E106
BR/Y
B
NEXT PAGE
W
15
W/L
W/L
10
W
W
C
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16
E106
BR
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20
B2
BR
1 2 3 4
D43
W
1 2 3 4 5 6
D51 , D57
W W
1 2 3
D52
W
1 2
D56
B
REFER TO THE FOLLOWING.
E103 , B5 -FUSE BLOCK-JUNCTION BOX (J/B)
TKWB0191E

WW-WIP/R-02


PRECEDING PAGE
A
L/Y
B
BR/Y
C
W
L/Y
1
M
REAR WASHER MOTOR
E22
2
LG/B
W
BR/Y
21
23
22
OUT PUT
AUTO STOP
ON
WIPER AMP.
INT
WASH
GND
COMBINATION SWITCH (REAR WIPER AND WASHER SWITCH)
E112
OFF
INT
ON
WASH
WASH
WASH
OFF
INT
ON
WASH
24
B/W
B/W
B
B
E50
E24


2
1
E22
BR
14
21
18
23
24
16
17
13
15
22
E112
GY

TKWB0192E

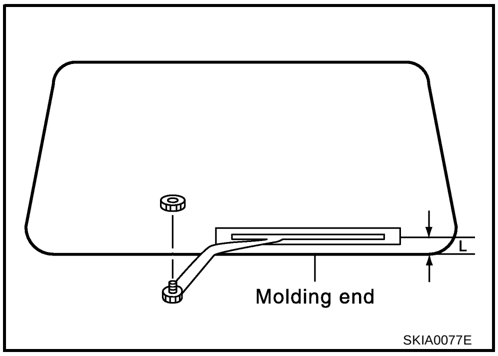
Terminal and Reference Values for Combination Switch

AKS00BBS

Terminal No.	Wire color	Item	Condition			Voltage
			Ignition switch	Condition or operation		
21	W	Rear wiper motor operation signal (ON)	ON	Wiper switch	OFF	Battery voltage
					ON	Approx. 0V
22	LG/B	Rear washer switch signal	ON	Washer switch	ON	Approx. 0V
					OFF	Battery voltage
23	BR/Y	Rear wiper auto stop signal	ON	Wiper operating		Approx. 0V
				Wiper stopped		Battery voltage
24	B/W	Ground	OFF	—		Approx. 0V

Removal and Installation of Rear Wiper Arms, Adjustment for Wiper Arms Stop Location

AKS00BBT



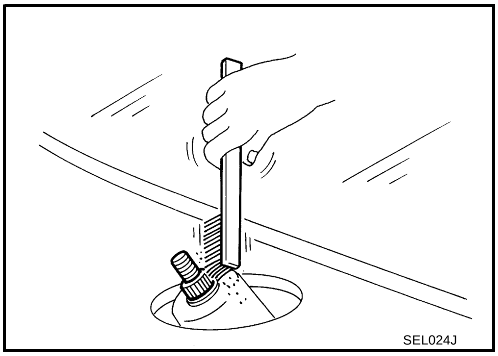
1. Turn on wiper switch to operate wiper motor and then turn it “OFF” (Auto Stop).
2. Lift the blade up and then set it down onto glass surface. Set the black center to clearance “L” immediately before tightening the nut.
3. Eject washer fluid. Turn on wiper switch to operate wiper motor and then turn it “OFF”.
4. Ensure that wiper blades stop on the lowest heat wire.
   - **Center to clearance “L”.**

     “L” : 55.6 - 70.6 mm (2.189 - 2.780 in)

   - **Tighten wiper arm nut to specified torque.**

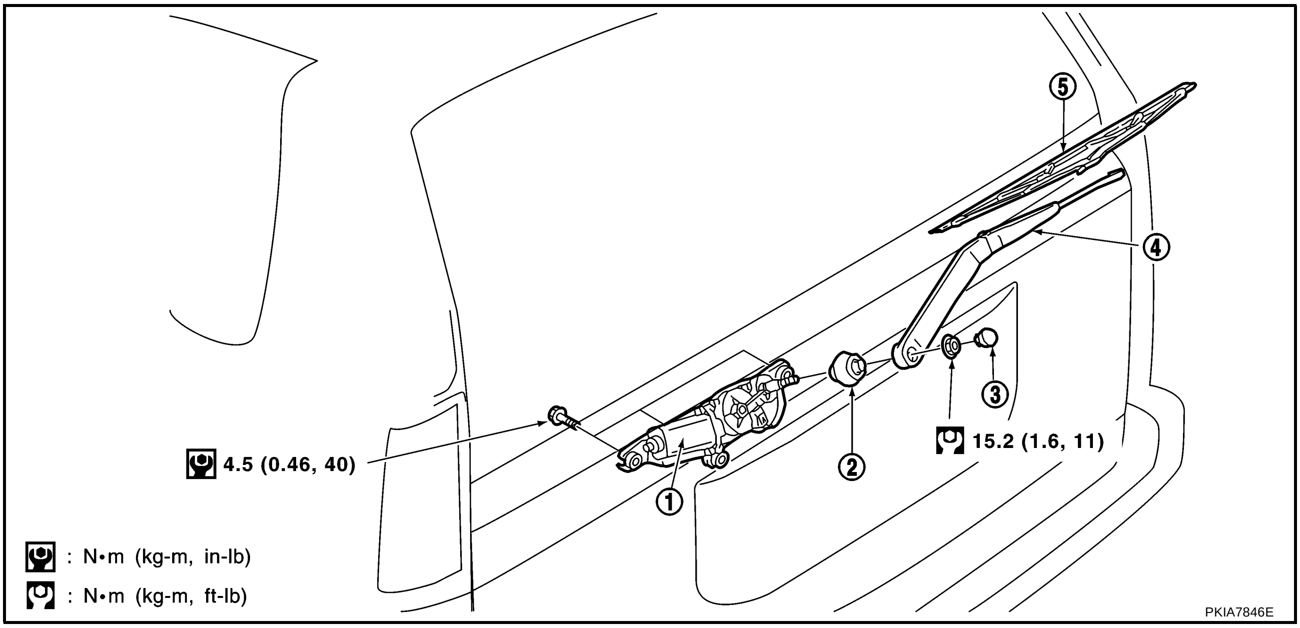
     Rear wiper arm nut : 15.2 N·m (1.6 kg-m, 11 ft-lb)

   - **Before reinstalling wiper arm, clean up the pivot area as illustrated. This will reduce possibility of wiper arm looseness.**



Removal and Installation of Wiper Motor and Linkage

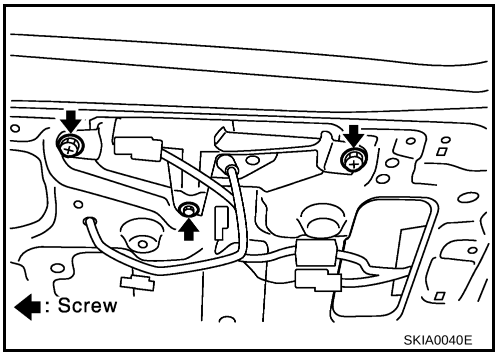
AKS00BBU



1. Wiper motor
2. Rubber
3. Nut cover
4. Wiper arm
5. Wiper blade

REMOVAL

1. Remove back door finisher. Refer to EI-35, "BACK DOOR TRIM" in “EXTERIOR & INTERIOR (EI)” section.
2. Operate wiper motor, and stop it at the auto stop position.
3. Disconnect wiper motor connector.
4. Remove wiper arm from the vehicle.
5. Remove wiper motor mounting screws (3).
6. Remove wiper motor from the vehicle.
7. Remove rubber from the vehicle.



INSTALLATION

1. Install rubber to the vehicle.
2. Install wiper motor to the vehicle.
3. Connect wiper motor to connector. Turn wiper switch ON to operate wiper motor, then turn wiper switch OFF (auto stop).
4. Install wiper arm to the vehicle. Refer to WW-14, "Removal and Installation of Rear Wiper Arms, Adjustment for Wiper Arms Stop Location" .
5. Install back door finisher. Refer to EI-35, "BACK DOOR TRIM" in “EXTERIOR & INTERIOR (EI)” section.
   - **Tighten wiper arm nuts to specified torque.**

     Rear wiper arm nut : 15.2 N·m (1.6 kg-m, 11 ft-lb)

   - **Tighten wiper motor screws to specified torque.**

     Rear wiper motor screw : 4.5 N·m (0.46 kg-m, 40 in-lb)

CAUTION:

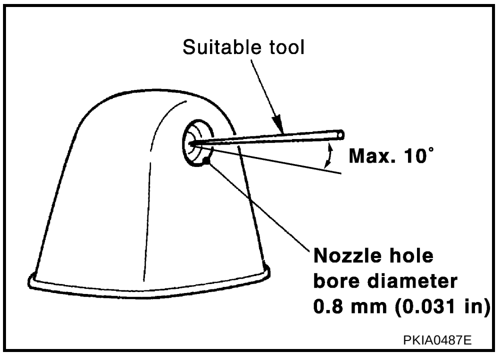
- **Do not drop wiper motor or cause it to contact other parts.**
- **Check grease conditions of motor arm and wiper link joint (at retainer). Apply grease if necessary.**

Washer Nozzle Adjustment

AKS00BBV

Adjust washer nozzle with suitable tool as shown in the figure.

Adjustable range : ±10° (In any direction)

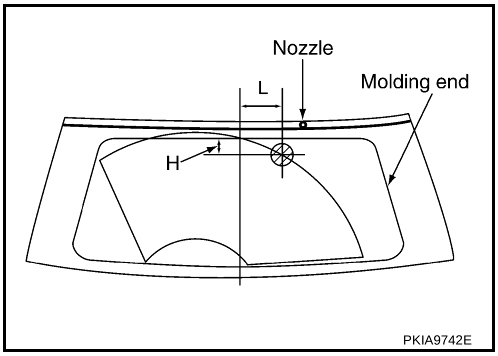

Suitable tool
Max. 10˚
Nozzle hole
bore diameter
0.8 mm (0.031 in)

PKIA0487E

Unit: mm (in)

*H	90 (3.54)
* L	150 (5.91)

*: The diameter of this circle is less than 40 mm (1.57 in).


Nozzle
Molding end
L
H

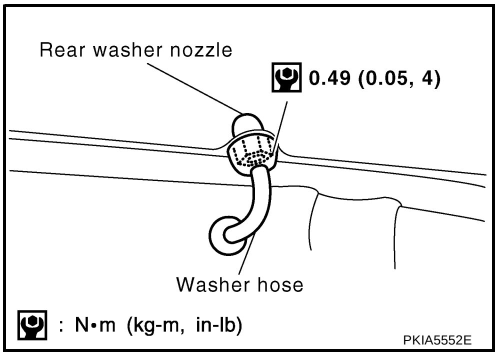
PKIA9742E

Removal and Installation of Rear Washer Nozzle

AKS00BBW

REMOVAL

1. Remove washer hose from washer nozzle.
2. Remove washer nozzle installation screw and remove rear washer nozzle.


Rear washer nozzle
0.49 (0.05, 4)
Washer hose
: N•m (kg-m, in-lb)

PKIA5552E

INSTALLATION

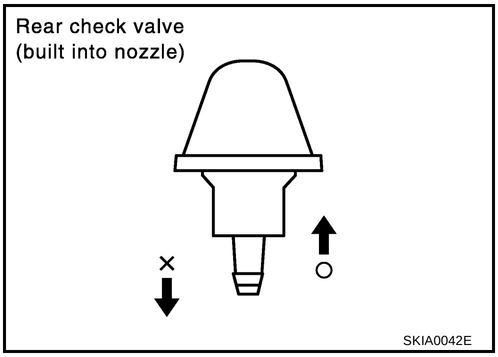
1. After connecting washer hose, press nozzle from cowl top cover surface.
2. Assemble nozzle and socket.
3. Adjust nozzle injection position.

Inspection of Rear Washer Nozzle

AKS00BBX

CHECK VALVE

Blow air in the injection direction, and check that air flows only one way. Make sure that the reverse direction (inhale) is not possible.


Rear check valve
(built into nozzle)
×
○

SKIA0042E

Removal and Installation of Wiper and Washer Switch

AKS00BBY

Refer to WW-10, "Removal and Installation of Wiper and Washer Switch" .

Removal and Installation of Washer Tank

AKS00BBZ

Refer to WW-10, "Removal and Installation of Washer Tank" .

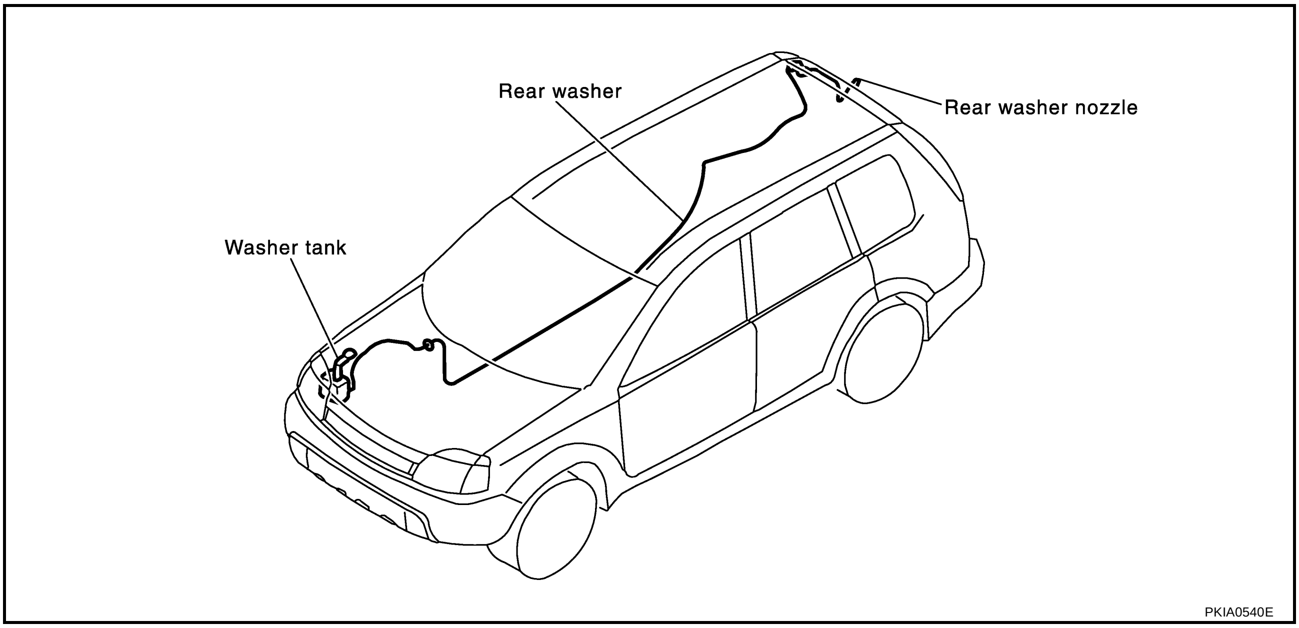
Removal and Installation of Washer Motor

AKS00BC0

Refer to WW-10, "Removal and Installation of Washer Motor" .

Rear Washer Tube Layout

AKS00BC1


Rear washer
Rear washer nozzle
Washer tank
PKIA0540E

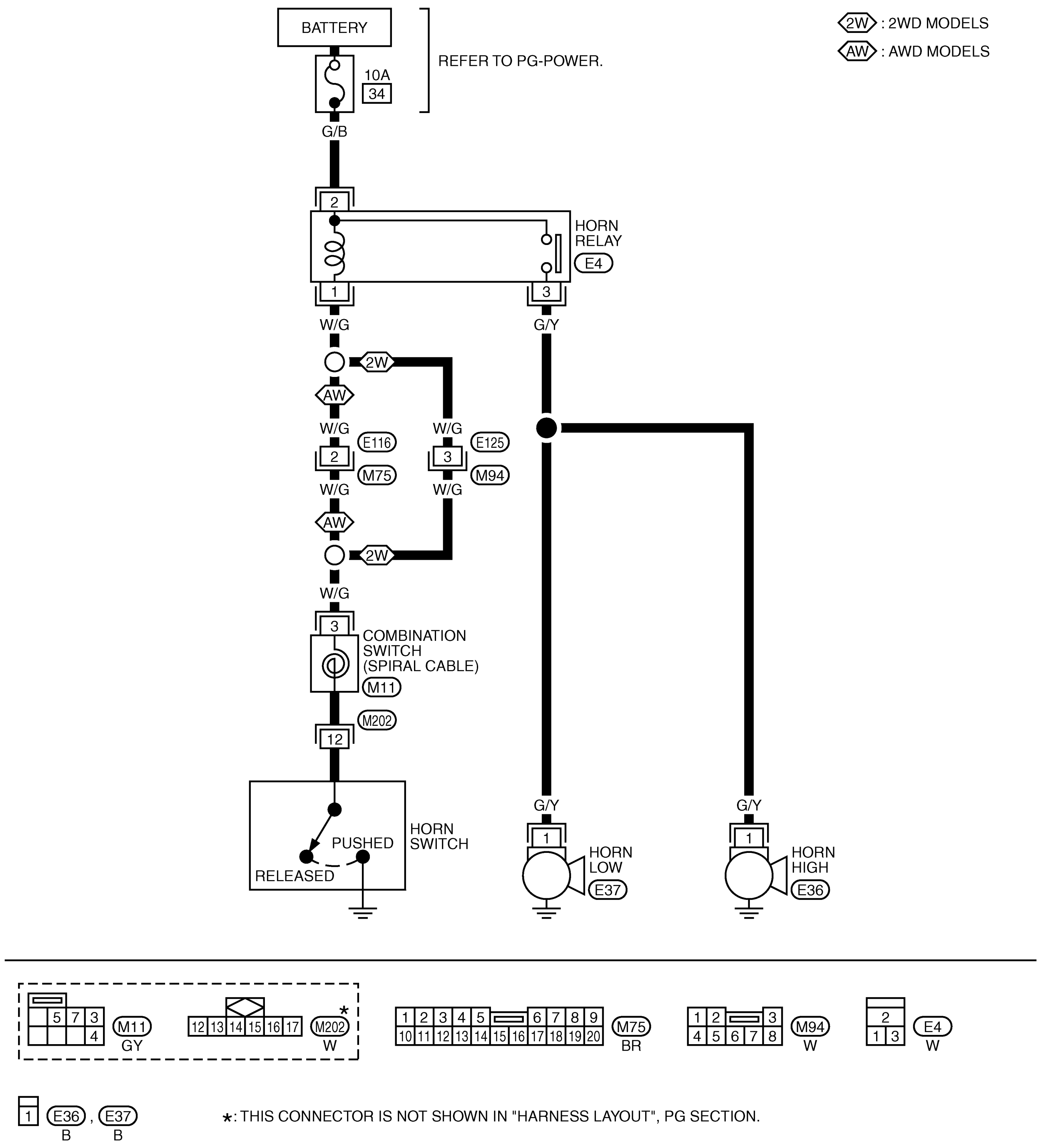
HORN

PFP:25610

Wiring Diagram — HORN —

AKS00BC2

WW-HORN-01


BATTERY
REFER TO PG-POWER.
10A
34
G/B
2
HORN
RELAY
E4
1
3
W/G
G/Y
2W
AW
W/G
E116
2
M75
W/G
E125
3
M94
W/G
AW
2W
W/G
3
COMBINATION
SWITCH
(SPIRAL CABLE)
M11
M202
12
HORN
SWITCH
PUSHED
RELEASED
G/Y
1
HORN
LOW
E37
G/Y
1
HORN
HIGH
E36
2W : 2WD MODELS
AW : AWD MODELS
5 7 3
4
M11
GY
12 13 14 15 16 17
M202
W
*
1 2 3 4 5 6 7 8 9
10 11 12 13 14 15 16 17 18 19 20
M75
BR
1 2 3
4 5 6 7 8
M94
W
2
1 3
E4
W
1
E36 , E37
B B

*: THIS CONNECTOR IS NOT SHOWN IN "HARNESS LAYOUT", PG SECTION.

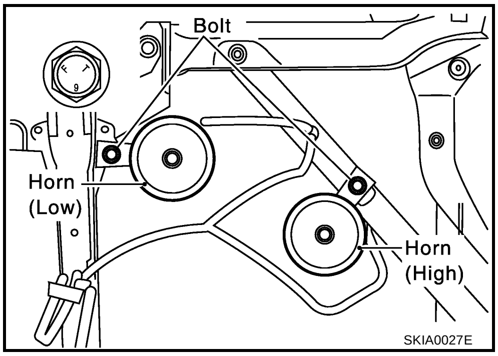
TKWB0263E

Removal and Installation

AKS00BC3

REMOVAL

1. Remove front grille. Refer to EI-18, "FRONT GRILLE" .
2. Disconnect horn connector.
3. Remove horn mounting bolts.
4. Remove horn from vehicle.



INSTALLATION

Installation is the reverse of removal. Note the tightening torque shown below.

Horn mounting bolt : 17.2 N·m (1.8 kg-m, 13 ft-lb)

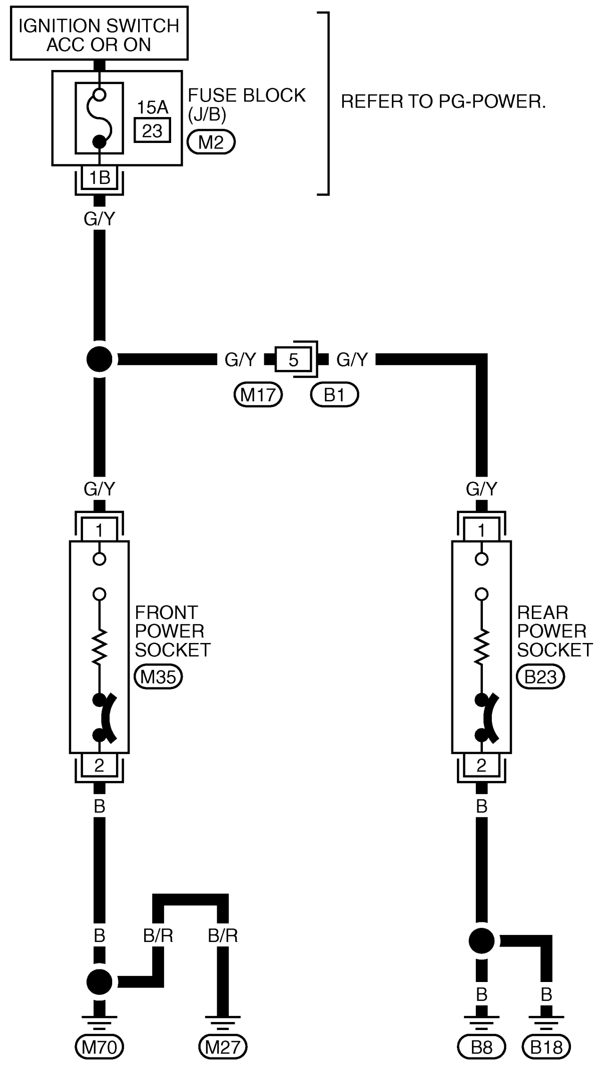
POWER SOCKET

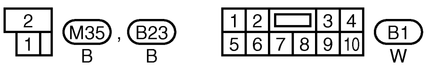
PFP:253A2

Wiring Diagram –POWER SOCKET–

AKS00BC6

WW-P/SCKT-01


IGNITION SWITCH
ACC OR ON
15A
23
FUSE BLOCK
(J/B)
M2
REFER TO PG-POWER.
1B
G/Y
G/Y
5
G/Y
M17
B1
G/Y
G/Y
1
1
FRONT
POWER
SOCKET
M35
REAR
POWER
SOCKET
B23
2
2
B
B
B
B/R
B/R
B
B
M70
M27
B8
B18


2
1
M35
,
B23
B
B
1
2
3
4
5
6
7
8
9
10
B1
W

REFER TO THE FOLLOWING.
M2 -FUSE BLOCK-JUNCTION BOX (J/B)

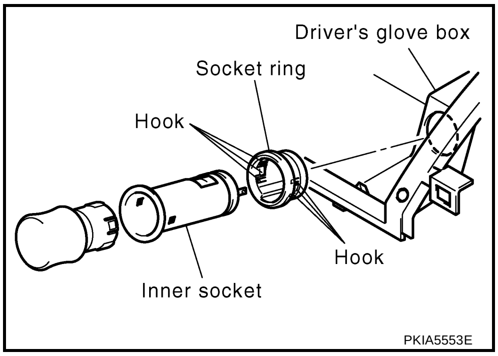
TKWB0193E

Removal and Installation of Front Power Socket

AKS00BC7

REMOVAL

1. Remove driver's glove box. Refer to IP-10, "INSTRUMENT PANEL ASSEMBLY" .
2. Disconnect power socket connector.
3. Pull out inner socket from socket ring.
4. Pull out socket ring from driver's glove box.


Driver's glove box
Socket ring
Hook
Hook
Inner socket
PKIA5553E

INSTALLATION

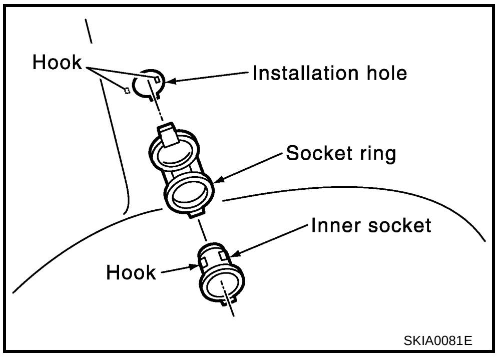
Installation is the reverse of removal.

Removal and Installation of Rear Power Socket

AKS00BC8

REMOVAL

1. Remove luggage side lower finisher. Refer to EI-38, "LUGGAGE SIDE LOWER FINISHER" .
2. Disconnect power socket connector.
3. Pull out inner socket from luggage side lower finisher.


Hook
Installation hole
Socket ring
Inner socket
Hook
SKIA0081E

INSTALLATION

Installation is the reverse of removal.